

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

In the specification, one paragraph has been amended on pages 2, to clarify terminology.

Claims 2, 3, 6, 7, and 9 are requested to be cancelled.

Claims 1, 4 and 5 are currently being amended.

Claims 10-12 are being added.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1, 4, 5 and 10-12 are now pending in this application. Reconsideration of the application is respectfully requested in light of these amendments and the remarks that follow.

The claims remaining in the application are directed to a charge-air cooler. Claim 1 has been amended to be directed to the embodiment of Figs. 2a-2c and to incorporate the subject matter of original claims 3 and 7. For each of these reasons, the rejection of claims 1, 4-6 and 9 as being anticipated by Frost is believed to be clearly inapplicable to claims 1, 4 and 5. Withdrawal of this rejection is respectfully requested.

Similarly, the rejection of claims 1, 3, 5, 6 and 8 as being anticipated by Kamiya et al. ("Kamiya") is also believed to be inapplicable to amended claims 1 and 5, which now include the subject matter of claim 7. Withdrawal of this rejection is also respectfully requested.

The rejection of claim 2 has been rendered moot by the cancellation of that claim.

Reconsideration is requested of the rejection of claim 7 under § 103 as being unpatentable over either of Frost or Kamiya in view of Baumann et al. (“Baumann”), insofar as that ground of rejection may be applied against amended claim 1.

First, there is no basis or suggestion for combining the references. Baumann relates to a charge-air cooler, whereas both Frost and Kamiya relate to condenser-type heat exchangers, which are designed very differently in order to reflect the very different conditions under which these two basic types of heat exchangers are used. In the case of a charge-air cooler, the heat exchanger is subjected to sharp swings of very high pressure, which place a great deal of stress on the sealed connections between the tubes and the header plate.

The present invention is directed toward solving this problem in a charge-air cooler, and the invention involves the claimed relationship between the header plate edge region(s) and the configuration of the tube opening(s). Thus, not only is there no suggestion to apply the structures of the primary references to a charge-air cooler, but further, it is not a matter of mere design choice or simply providing “more surface area” to select whether the rim of the tube opening extends in a direction toward or away from the header tank. Claim 1 is directed to a specific structural configuration that serves to minimize the stress on the header-tube joints in a charge-air cooler, and the references provide no “teaching” whatsoever of either that configuration or of the advantages thereof in solving the problem to which the present invention is directed. Therefore, the rejection of original claim 7 should not be applied to amended claim 1 and its dependent claims.

New claim 10 is generic to both embodiments according to the present invention and has been drafted in means-plus-function language, in order to emphasize the problem particular to charge-air coolers that is solved by the present invention, in contrast to the Frost and Kamiya which relate to condenser type heat exchangers. Further, the Frost reference (on page 13) teaches directly away from the present invention, i.e., that one should create greater contact area between the tube and the header, rather than less contact area according to the present invention, to minimize the area for pulsating pressure-induced deformations. See, page 8, lines 15-23 of the present application. Further, Kamiya is characterized by a "large curvature portion 38" at the central portion of the tube plate, having a radius of curvature R1,

and therefore does not have a "planar central region of the tube sheet," as called for by claim 10. Dependent claims 11 and 12 are directed more specifically to the two illustrated embodiments of the present invention. It is therefore respectfully submitted that neither Frost nor Kamiya can fulfill the role of a "basic teaching reference" with respect to the subject matter of claims 10-12.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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